Henry Messing, Susan Sferra, and Pablo Arroyave (coordinators)

FY 1998 - FY 1999

Nest success and failure are currently being documented through several nest monitoring studies on southwestern willow flycatchers. However, conventional nest monitoring techniques have not uncovered the causes of nest failure. Causes of nest failure and species of nest predators may also differ in native versus exotic riparian habitats. Gaining insight into the causes of nest failure may help in developing management recommendations for this endangered species. Video cameras can provide much of this unknown information by documenting behavior and identity of predators, circumstances of predation, and parasitism events (e.g., absence of adult for an excessive amount of time). It is hoped that this study will provide specific information about nest failures, predator identity, how the predator approaches the nest, behavior of adults when confronted by a predator or potential nest parasite, and if nestlings survive a predation event.

- Identify nest predator species.
- Document behavior of predator, adult host birds, and young during predation events.

A greater number of willow flycatchers exhibited flighty behavior in the presence of video cameras in 1999 than in 1998. Blinds and camera mounts were adjusted to make them more inconspicuous. The camera head was shortened and the camera was mounted on vegetation rather than the pole.

Cameras were placed on 25 willow flycatcher and 5 surrogate species nests. Cameras on 12 willow flycatcher and 2 surrogate species nests were removed when adults failed to return to the nest within 1.5 hours.

The remaining cameras documented eight nest predation events. Three nests visited by potential predators fledged young. Of these three nests, one was visited by a common kingsnake after the nest had already fledged, one was visited by a common kingsnake forcing the young to fledge, and one produced a fledgling after the sibling was preyed on by a Cooper's Hawk. The remaining predation events resulted in loss of the entire clutch. Two nests were depredated by Cooper's Hawks, one by a common kingsnake, one by a gopher snake, and one by a yellow-breasted Chat that punctured willow flycatcher eggs and appeared to eat the contents. The camera remaining on a surrogate (Yellow-breasted Chat) species nest documented an adult Chat removing two young from a nest. The third nestling was later eaten by a spiny lizard.

Highlights from this field season include:

- new, more reliable techniques for camera mounting
- video documented predation event by a Yellow-breasted Chat
- video documented predation event by a gopher snake
- video documented predation event by a Cooper's Hawk

- video documented predation event by a spiny lizard
- video footage of willow flycatchers rebuilding a nest, laying eggs, hatching eggs, and attempting to fend off a common kingsnake attack.

The Arizona Game and Fish Department is conducting the predator study, with input from Reclamation and the U.S. Geologic Survey, as needed.

Paradzick, C. E., R. F Davidson, J. W. Rourke, M. W. Sumner, and T.D. McCarthey. 1999. Southwestern Willow Flycatcher 1998 Survey and Nest Monitoring Report. Nongame and Endangered Wildlife Program Technical Report 141. Arizona Game and Fish Department, Phoenix, Arizona.

Art Coykendall, Hector Garcia, and Darrell Ahlers

FY 1995 - FY 1999

The southwestern willow flycatcher (Empidonax traillii extimus) is a species restricted to dense riparian vegetation. Since listed as a federally endangered species in February 1995, Reclamation has undertaken Section 7 consultation under the Endangered Species Act (ESA) of 1973, as amended. Through this consultation process Reclamation has been required to determine the effects of all proposed projects or water operational changes on the species and its proposed critical habitat. Reclamation's Albuquerque Area Office and the Technical Service Center initiated technical studies in FY 1995 within the Rio Grande Basin of New Mexico. These studies involved determining the presence or absence of the species at specific sites from Velarde, New Mexico, to the headwaters of Elephant Butte Reservoir. At the close of the 1995 season, it was apparent a more quantitative and extensive study approach was needed to adequately address the species under the ESA. Reclamation's river maintenance program, preparation of resource management plans, grazing leases, land transfers, water operational changes of facilities, and construction related activities are being delayed due to the lack of sufficient information to address species impacts. The need for a better understanding of this species and its relationship to on-going and proposed projects throughout its range is needed. In addition, there is a need to coordinate and assimilate various independent agency and private entity studies currently undertaken and planned in order that appropriate information is obtained in the most cost-efficient manner.

The primary goal of this study is to develop an understanding of the species breeding and migratory habitat requirements and identify mitigation measures to avoid adverse project related impacts. With this knowledge, potential habitat could be identified and a determination of suitability made. To achieve these goals, the specific objectives for this project are as follows: (1) determine the distribution of the species, especially in its breeding range; (2) quantify characteristics of the species' breeding habitat in terms of vegetation composition, density, and structure; habitat patch size and width of riparian corridor; hydrology; human disturbance; and, land use; (3) determine the relative population and its trend; (4) determine the level of nest parasitism by the brown-headed cowbird; (5) determine the relationship between insect abundance and breeding territory establishment; (6) determine the migratory corridors adjacent to irrigation facilities; and (7) determine the relationship between environmental factors (i.e., temperature and relative humidity) and species tolerance as it relates to nest success and breeding territory establishment.
The overall objective of this project is to provide technically sound and supportable information on the distribution and habitat requirements of the southwestern willow flycatcher in the Rio Grande and Pecos River Basins of New Mexico. Results obtained within these river basins could also be used to address the problems that currently exist within other offices of the Upper Colorado Region, as well as the Lower Colorado Region.

Since 1995, our understanding of the distribution and abundance of southwestern willow flycatchers within the Rio Grande and Pecos River Basins of New Mexico has greatly improved. Flycatchers have been found in localized areas where they were previously believed to have been extirpated. These detections, in conjunction with a continued monitoring of known populations, have provided value data to the ongoing recovery efforts. In addition to the efforts within the Rio Grande and Pecos River Basin, 1999 efforts revealed a large, healthy population within the Price River drainage of central Utah. The Utah population (if determined to be that of E.t. extimus) would be considered the second largest known population of southwestern willow flycatchers.

Population trends within the Middle Rio Grande basin of central New Mexico appear to be temporarily stable. Smaller populations in northern New Mexico have been lost, presumably due to a lack of natural recruitment. The quantification of flycatcher habitat provided the basis for the development of a predictive habitat suitability model. Criteria incorporated into the model include vegetative structure, density, and a hydrologic component. The model has accurately predicted the distribution of flycatcher detections within suitable habitats within the Middle Rio Grande basin of central New Mexico. The flycatcher habitat suitability model continues to be refined and will be applied to other riparian areas throughout the Southwest. A cooperative effort to refine the willow flycatcher habitat suitability model has been initiated with Colorado State University, Department of Natural Resources.

The effect of brown-headed cowbird brood parasitism on the nesting success of southwestern willow flycatchers continues to be evaluated. Reclamation's cowbird trapping and removal program appears to have been effective at reducing parasitism levels in localized populations of neotropical migrant songbirds, including the southwestern willow flycatcher. However, whether the reduction in brood parasitism has actually increased nest success has yet to be determined.

Participation in this study continues to improve due to the numerous resource issues surrounding the southwestern willow flycatcher. The following partners are those that have significantly contributed both time and financial resources to this study:

Albuquerque Area Office (Reclamation)
U.S. Army Corps of Engineers
U.S. Forest Service Research Center
Upper Colorado Regional Office (Reclamation)
Lower Colorado Regional Office (Reclamation)
New Mexico Natural Heritage Program
U.S. Fish and Wildlife Service
Bureau of Land Management, Soccoro, New Mexico
USGS Biological Resources Division
New Mexico Game and Fish
Colorado State University, Department of Natural Resources

Ahlers, D. D. and L. White. April 1999. 1998 Southwestern Willow Flycatcher Study Results: Selected Sites Along the Rio Grande From Velarde, New Mexico, to the Headwaters of Elephant Butte Reservoir. U.S. Bureau of Reclamation.

Ahlers, D. D. March 1999. Presentation of Southwestern Willow Flycatcher Habitat Model at Population Viability Workshop, Phoenix, Arizona.

Ahlers, D. D. Presentation of Southwestern Willow Flycatcher Detections and Distribution within the Middle Rio Grande Basin at Southwestern Willow Flycatcher Recovery Team meetings held in Albuquerque, New Mexico and Las Cruces, New Mexico.